

STCG Subcon Subgroup Meeting Minutes

March 7, 2000

Introductions/Announcements (Arlene Tortoso)

Arlene opened the meeting and introductions were made. She mentioned that a Carbon Tet ITRD meeting was scheduled for March 8-9. Also, a video on technologies used at various DOE sites (parts were filmed at Hanford) will air on March 11. Dennis Faulk (EPA), Wayne Soper (Ecology), Julie Erickson (DOE-AMT), and John Fruchter (PNNL) are featured in the video.

Jim Hanson stated that the Hanford Technology Deployment Book for FY99 is published and will soon be on the web site. He will bring copies to the next meeting to distribute.

Bob Rosselli is now a Deputy Manager on the Business side of DOE-RL. Paul Kruger is the new Assistant Manager for S&T at Hanford. The SCFA Mid-Year Review is next week. Jim Hanson, Jerry White, and Mike Thompson plan to attend. Gerald Boyd will be there to discuss FY01 priorities and funding.

Two additional high-priority projects for Hanford will be funded by SCFA in FY01 -- Vadose Zone Monitoring for the Hanford Surface Barrier and Hydrologic Characterization of the Vadose Zone at Hanford. There may be additional funding obtained from an organization called WETO in Montana.

Savannah River submitted an ASTD proposal on purge water at Hanford. The two sites were collaborating on this proposal, but ran out of time, so Savannah River submitted it on their own. They want to do a technology demonstration here. Five ASTD proposals were submitted by Hanford, all on D&D. PNNL is submitting three proposals to SCFA at the end of March on the Hanford barrier (on slope stability and asphalt durability).

During the week of April 10, there will be a high-level S&T exhibit in Washington, D.C. Hanford (both RL and ORP) will participate. Booths and poster sessions will be designed to provide information to Congress and their staffers.

Wes Bratton reported that ARA's cone penetrometer demonstration in the S tank farm was successful.

Review Minutes from Last Meeting (Facilitator)

The facilitator reviewed the minutes from the January 12, 1999 meeting. Jim Hanson requested a small change in the section on the National STCG Meeting, which was made.

Updates

100-N Area ITRD Workshop (Arlene Tortoso)

The 100-N Area ITRD Workshop was held on February 9-10. There are ongoing treatability studies on the following items: bank stabilization, modeling, soil flushing, and subsurface biobarriers. Follow-on work is desired, but several issues require further scoping first, and there are some outstanding actions that must be closed. The 100-N Area ITRD has changed hands within the ITRD Program at Sandia National Lab, and the lead regulator has changed twice, thus there has been inconsistency in the official positions of the participants. Soil flushing will work, but at what cost? Arlene thinks we have done enough studies and have enough data to make recommendations by the end of this fiscal year. Everyone seems to agree with Mike Conley's modeling that the strontium will decay before it reaches the river. Gordon Rogers thinks that natural attenuation makes sense for this plume.

Carbon Tet ITRD (Dennis Faulk)

Dennis stated that he hopes to finish the Carbon Tet ITRD activities by the end of summer and then do a ROD amendment in early fall, shooting for implementation of the major work in FY02. Test plans will be written and approved in FY01.

Rick Nace's Schedule and Interfaces with Hanford (Jim Hanson)

Jim will meet with Rick Nace at the SCFA Mid-Year Review next week.

Update on ISGR Activities (Ed Thornton)

Ed presented the schedule for FY00 work on in situ gaseous reduction of the 100-D Area chromium plume. The draft work plan for the technology demonstration was completed on February 1. They are currently working with Bechtel Hanford on plans to install injection and extraction wells in the June-July time frame. A tracer test is planned for August. Gas injection/treatment will be initiated on September 1, and the treatment will take 3-5 months. The Test Plan will be provided to the Subgroup for review and comment.

The source of the 100-D chromium plume was likely the water treatment plant. Some trenching was done in January 2000 to determine where to place the boreholes. Soil samples were collected and analyzed, and not much hexavalent chromium was found. However, high levels of total chromium discovered north of the 183-DR head house suggest that a major contaminant source has been located. It is anticipated that this will be the location for drilling the first borehole.

It was noted that ISGR could be used in a D&D application with hexavalent chromium contamination on a concrete floor.

Advance Characterization Workshop (Mark Freshley)

Over 100 participants attended this workshop on vadose zone transport in January 2000. Minutes of the technical sessions are summarized on the GW/VZ web site. The team is working with about nine technologies now.

Monitored Natural Attenuation At Savannah River (Scott Petersen)

Savannah River is using monitored natural attenuation now. It is usually employed in diffuse areas around a site that was cleaned, especially in areas where it is not cost-effective to clean it all up. Scott stated that we aren't sure if there are any applications here at Hanford.

EM-50 Planning Team Activities (Jerry White)

Two years ago HQ published a new R&D Program Plan to "reinvent EM-50" and make it more end-user responsive. Gerald Boyd formed a planning team with members from the sites, HQ, and the end-user community. Jerry is Hanford's representative on the team. The team made 14 recommendations, and Boyd agreed to all of them. He asked the team to develop implementation plans. These are documented in the draft OST Management Plan, which will eventually go out for review. The key measure is whether the Focus Areas are dealing with the problems at the sites. A new version of the Program Plan will also be developed.

SCFA asked Jerry to work with their new Lead lab organization, which provides near-term technical assistance. Jerry is working with all the Bechtel sites to get better ties to the end-users.

Laser Drilling (Rick Cameron)

High-powered lasers developed under the Star Wars Initiative can be used to enhance existing drilling technology. Rick's project team is proposing to integrate laser drilling (using a 3 kW Nd:YAG laser) with the cone penetrometer when it meets refusal in the caliche layer or cobble. U.C. Santa Barbara has a Memorandum of Understanding with the Navy to use their laser system. The laser will allow them to access much greater depths with the cone penetrometer. Core sampling and characterization tools can be inserted. The laser technology will vaporize the rock; it doesn't just melt it.

Four tasks are envisioned for a demonstration at Hanford, amounting to a \$500K program that would finish in December 2000:

- Laboratory demonstration of existing laser drilling technology on Hanford core and rock samples
- Engineering effort to design laser drilling head that can be utilized on the wireline cone penetrometer system
- Laboratory demonstration of cone penetrometer laser drill head using Hanford core, rock, and 55-gallon drum samples
- Field demonstration in 100 and 200 Areas.

They are looking for funding now from SCFA and NETL. They will also try to get Idaho and

Nevada interested in using the integrated technology. It should work fine to depths of 200-300 feet.

There are a number of engineering challenges. For example, will it work in a saturated zone? Vaporization of water takes a lot of energy, and this energy would not be available to the drilling operation. Also, where does the blasted material go? Actually, it is vaporized and pushed out into the formation, so there is no need to bring it to the surface.

In past discussions of deep access technologies, there was an issue that methods that significantly heat the surrounding soils would also drive off volatiles, decreasing the effectiveness of the access method's ability to fully characterize the soils. The group felt that the proposed laser-push technology offered an advantage in that the laser could be turned off and normal push resumed. Characterization could be resumed after the CPT has passed through the heated area (3-4 feet according to ARA).

Some of the advantages of integrating laser drilling and the cone penetrometer include:

- Laser drilling is only used as needed (i.e., where the cone penetrometer meets refusal)
- Integration of two developed technologies offers significant cost savings over conducting basic research.
- Current cone penetrometer costs are only one-tenth of conventional drilling costs. This combination can offer significant cost savings if the cone penetrometer can replace more conventional drilling.

The Subgroup unanimously endorsed this integrated laser drilling/cone penetrometer technology. The team was strongly encouraged to pursue funding for the project.

Updated GW/VZ S&T Roadmap (Mark Freshley)

The GW/VZ Integration Project is doing their annual revision of the S&T Roadmap, which describes what needs to be done when and how activities are linked. This year they are incorporating the FY99 EMSP awards and the Risk Technical Element. In FY01 they will add Monitoring, and in FY02 they will add Remediation. The Roadmap tells how S&T can help the Site with ongoing activities. The existing Technical Elements are Inventory, Vadose Zone, Groundwater, and River. The S&T needs for these elements will only change slightly this year, mainly to better reflect the carbon tetrachloride issue.

The EMSP projects were added where they can make the biggest contributions. The GW/VZ Integration Project can influence the EMSP projects, but can't direct them.

In order to develop the Risk Technical Element, they met with external experts to develop a set of activities and outcomes for the following areas:

- General risk assessment
- Ecological risk assessment
- Economic risk assessment

- Human health risk assessment
- Socio-cultural risk assessment

These will primarily be inputs to the System Assessment Capability (SAC).

Mike Truex is getting the new Risk S&T Needs ready now. They will be discussed at the May meeting. The current focus is on how to organize the needs. Four new needs are planned, which will outline the technical gaps to be addressed.

Arlene stated that we need to understand how these risk assessments will tie into our remediation goals. We need to think about how they will change our remediation efforts. How is risk incorporated into the decision process?

Status Report on Selected S&T Needs (Scott Petersen)

Scott noted that the Subgroup has finished reviewing all the priority 1 needs. He distributed copies of RL-SS10 - Improved Technology for Delineating Burial Ground Contents and RL-SS11 - Cost-Effective, In Situ Remediation of Hexavalent Chromium in the Vadose Zone. Regarding recent efforts in Enhanced Site Characterization of Burial Grounds, we need better confidence in what's down there in the burial grounds and an improved image. 3-D GPR has been demonstrated, but we need to figure out how to deploy it cost-effectively.

Action Items

1. Get copy of video on technologies used at DOE sites to show at the next Subgroup meeting (Facilitator). Done.
2. Bring copies of the FY99 Hanford Technology Deployment Book to the next meeting for distribution (Jim Hanson).
3. Make change to January 12 meeting minutes requested by Jim Hanson and reissue them (Facilitator). Done.

Attendees

Gary Ballew (PREC)
 Wes Bratton (ARA)
 Rick Cameron (PNNL)
 Linda Fassbender (PNNL)
 Dennis Faulk (EPA)
 Mark Freshley (PNNL)
 Judit German-Heins (Nez Perce Tribe)
 Jim Hanson (DOE-RL)
 Wayne Martin (PNNL)
 Scott Petersen (BHI/TA)

Gordon Rogers (HAB)
Ed Thornton (PNNL)
Arlene Tortoso (DOE-RL)
Mike Truex (PNNL)
Jerry White (BHI)

Wrap-Up (Arlene Tortoso)

The next Subcon Subgroup meeting was scheduled for April 4. However, due to spring break, the meeting was subsequently postponed until May 9.

Candidate agenda items include:

- SCFA Mid-Year Review (Wayne Martin or Jerry White)
- Tritium Issue (Wayne Martin)
- Carbon Tetrachloride ITRD (Arlene Tortoso)
- S&T Needs Status (Mike Truex)
- Laser Drilling Update (Scott Petersen)
- In Situ Gaseous Reduction Update (Ed Thornton)